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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,951	07/12/2005	Hiddenori Akita	CML00596JC	8852
22917	7590	04/29/2009	EXAMINER	
MOTOROLA, INC. 1303 EAST ALGONQUIN ROAD IL01/3RD SCHAUMBURG, IL 60196			CHAN, SAI MING	
			ART UNIT	PAPER NUMBER
			2416	
			NOTIFICATION DATE	DELIVERY MODE
			04/29/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing.US@motorola.com

Office Action Summary	Application No.	Applicant(s)	
	10/541,951	AKITA, HIDENORI	
	Examiner	Art Unit	
	SAI-MING CHAN	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/9/2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yasotharan et al. (U.S. Patent Publication # 20040120409)**, in view of **Georgiades et al. (U.S. Patent # 5995045)**.

Consider **claim 1**, Yasotharan et al. clearly disclose and show an orthogonal frequency division multiplexing transmitter in (OFDM) communication device, comprising:

a time multiplexor (fig. 1 (30), paragraphs 29-30 (multiplexer));

a synchronization signal generator (fig. 1(200), paragraphs 29-30 (training signal generator)) operatively connected to the time multiplexor (fig. 1 (30), paragraph 0030 (multiplexer)); and

a data supplier (fig. 1 (100), paragraphs 29-30 (OFDM signal generator)) operatively connected to the time multiplexor (fig. 1 (30), paragraph 0030 (multiplexer)),

wherein a preamble signal (paragraph 0030), in the synchronization signal generator, is time-multiplexed in the time multiplexor (fig. 1 (30), paragraph 0029 (multiplexer for combining signals)) with transmit data received from the data supplier (fig. 1 (30), paragraph 0029 (OFDM signals)) to generate an OFDM transmit signal (fig. 1 (30), paragraph 0029 (multiplex for combining OFDM signals and training signal)).

However Yasotharan et al., do not specifically show a zero amplitude reduced preamble signal.

In the same field of endeavor, Georghiades clearly show a zero amplitude reduced preamble signal (fig. 1 (preamble signal), col. 2, lines 1-7 (preamble are zeros)), which is obtained by passing a specified synchronization preamble (fig. 1 (preamble signal)) through an ideal low-pass filter (col. 2, lines 1-7 (low pass filter)) to reduce a signal component to near zero amplitude within a time domain (fig. 1 (preamble signal), col. 2, lines 1-7 (preamble are zeros)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to demonstrate an OFDM communication device, as taught by Yasotharan, and show a zero amplitude reduced preamble signal, as taught by Georghiades, so that symbol synchronization between transmitter and receiver can be done smoothly.

Consider **claim 7**, Yasotharan et al. clearly disclose and show an orthogonal frequency division multiplexing (OFDM). communication device for synchronizing a transmitter and a receiver with a synchronization preamble, comprising:

a receiver having a synchronization timing calculator ((fig. 6 (404), paragraph 0056 (pulse train detector))) for determining a cross correlation between a received signal and a second specified synchronization preamble ((fig.7(412), paragraph 0056 (cross-correlator))), which is patterned the same as the first specified synchronization preamble counterpart in the transmitter section (paragraph 9 (training signal for symbol synchronization), and calculating a synchronization position (paragraph 0096 (number

of samples to skip)), in accordance with the determined cross correlation (paragraph 0056 (cross correlation)).

However Yasotharan et al., do not specifically show a transmitter for obtaining a zero amplitude reduced preamble signal.

In the same field of endeavor, Georghiades et al. clearly show a transmitter (col. 2, lines 41-45 (preamble may be transmitted)), for obtaining a zero amplitude reduced preamble signal (fig. 1 (preamble signal), col. 2, lines 1-7 (preamble are zeros)), which is obtained by passing a specified synchronization preamble (fig. 1 (preamble signal)) through an ideal low-pass filter (col. 2, lines 1-7 (low pass filter)) to reduce a signal component to near zero amplitude within a time domain (fig. 1 (preamble signal), col. 2, lines 1-7 (preamble are zeros)); and a synchronization position, which is shifted from a peak value position by a specified amount of time (col. 2, lines 17-26 (corrected out-of-phase data signal)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to demonstrate an OFDM communication device, as taught by Yasotharan, and show a zero amplitude reduced preamble signal, as taught by Georghiades, so that symbol synchronization between transmitter and receiver can be done smoothly.

Consider **claim 10**, and **as applied to claim 7 above**, Yasotharan et al., as modified by Geile, clearly disclose and show as described the receiver in the OFDM communication device, wherein the synchronization position is shifted from a peak

position (paragraph 0056 (maximum)) of said cross correlation (paragraph 0056 (cross-correlation)) by a specified amount of time (paragraph 0071 (cyclically shifted (time of detection + time of beginning of transmission))).

Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yasotharan et al. (U.S. Patent Publication # 20040120409)**, in view of **Georghiades et al. (U.S. Patent # 5995045)**, and in view of **Wu et al. (U.S. Patent Publication # 6850481)**.

Consider **claim 2**, and **as applied to claim 1 above**,
claim 8, and **as applied to claim 7 above**,
Yasotharan et al., clearly disclose and show the FFT section in the filter (paragraph 0035 (FFT/IFFT algorithm)).

However, Yasotharan et al. do not specifically disclose zero substitution for output having frequency higher than specified.

In the same field of endeavor, Wu et al. clearly show a zero substitution section for providing zero substitution (column 3, lines 3-8 (a zero value is substituted) for FFT section output components having a frequency higher than specified (column 3, lines 3-8 (noise or frequency higher than specified))).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to demonstrate an OFDM communication device, as taught by

Yasotharan, and display zero substitution, as taught by Wu, so that symbol synchronization between transmitter and receiver can be done smoothly.

Claims 3-4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yasotharan et al. (U.S. Patent Publication # 20040120409)**, in view of **Georghiades et al. (U.S. Patent # 5995045)** and **Wu et al. (U.S. Patent Publication # 6850481)**, and further in view of **Klank et al. (U.S. Patent # 6226337)**.

Consider **claim 3**, and **as applied to claim 2 above**,
claim 4, and **as applied to claim 1 above**,
claim 9, and **as applied to claim 7 above**,
Yasotharan et al. clearly disclose and show a transmitter in the OFDM communication device as described.

However, Yasotharan et al. do not specifically disclose a table that stores values obtained when input signals pass through said ideal low-pass filter in accordance with the values of the input signals.

In the same field of endeavor, Klank et al. clearly show a table (column 3, lines 22-29 (stored in the receiver)) that stores values obtained (column 3, lines 22-29 (sequence transformed by FFT)) when input signals pass through said ideal low-pass filter (column 3, lines 22-29 (sequence transformed by FFT)) in accordance with the values of the input signals (column 3, lines 22-29 (sequence)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to demonstrate an OFDM communication device, as taught by Yasotharan, and disclose a table that stores values obtained when input signals pass through said ideal low-pass filter in accordance with the values of the input signals, as taught by Klank, so that symbol synchronization between transmitter and receiver can be done smoothly.

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Applicant's arguments filed on June 11, 2008, with respect to claims 1 and 7, on pages 5-8 of the remarks, have been carefully considered.

Claim 7 merely mentions "shifted from a peak value position by a specific amount of time". The Examiner has to interpret it in the broadest sense.

In the present application, Applicant basically argues, that Yasotharan does not teach or suggest "use a low-pass filter to reduce a signal component to near zero amplitude", "synchronization position is shifted from a peak position by a specified amount of time". The Examiner has modified the response with a new reference which provides "use a low-pass filter to reduce a signal component to near zero amplitude", "synchronization position is shifted from a peak position by a specified amount of time". See the above rejections of claims 1 and 7, for the relevant interpretation and citations found in Georgiades, disclosing the missing limitations.

Conclusion

Any response to this Office Action should be **faxed to (571) 273-8300 or mailed to:**

Commissioner for Patents
P.O. Box 1450
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Hand-delivered responses should be brought to

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Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Sai-Ming Chan whose telephone number is (571) 270-1769. The Examiner can normally be reached on Monday-Thursday from 8:30 am to 5:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

/Sai-Ming Chan/

Examiner, Art Unit 2416

April 14, 2009

/Kevin C. Harper/

Primary Examiner, Art Unit 2416